

DETAILED ACTION

Claim Objections

1. Claims 5, 15, 16, 21, and 22 are objected to because of the following informalities:
 - a. Claim 5, line 2: "a module which are removable" should be changed to --a module which is removable--
 - b. Claim 15, line 12: "the particular mode" should be changed to --a particular mode--
 - c. Claim 16, line 2: "modules which is removable" should be changed to---modules which are removable--
 - d. Claims 21 and 22: The preamble of each claim 21 and 22 should begin with "A method". Examiner apologizes for incorrectly objecting to the preambles of claims 21 and 22 in the previous office action.Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 3 - 5 and 15 - 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
 - a. The use of the phrase "and/or", as recited in claim 3, line 2, is generally confusing in that it is unclear to the examiner whether the applicant intends to claim the respective

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limitations together or in the alternative. It is suggested that "and/or" be changed to --at least one of--.

b. Claim 15: the phrase "certain operating equipment", as recited on lines 9 - 10 and 11, is vague because it does not identify any specific structural elements. Additionally, it is unclear as to whether the "certain operating equipment" as recited on lines 9 - 10 represents the same structural elements as the "certain operating equipment" as recited on line 11.

c. The use of the term "its", as recited in claim 21, line 3 and in claim 22, line 3, renders the claims indefinite as it is unclear as to which structural element or limitation the term is referring. Structural elements or limitations should always be referred to by name.

4. Claim 15 recites the limitation "the rigid elongate product" in lines 5 - 6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 1, 6, 9, 11, 12, 15, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thome (EP 0020257) in view of De Groot et al. (6,439,445).

Regarding claim 1, Thome discloses an apparatus comprising: a tensioner (38) for controlling paying out of said articles along an axis of said tensioner, a structure tiltable (mast 5) between upright and fully horizontal states, wherein the apparatus is operable in a first mode wherein the tensioner is carried by said structure with the tensioner axis at an elevated angle, aligned with a departure angle of rigid elongate product (pipe elements 4) being laid, and a second mode wherein the tensioner is arranged with the tensioner axis substantially horizontal (Figs. 1 - 8; paragraphs 0012, 0015, 0018, 0023 - 0031, and 0052). Thome fails to disclose an apparatus in a second mode receiving flexible elongate product from the tensioner along said axis and diverting the flexible elongate product via a support structure to a more vertical angle for departure from the vessel. De Groot teaches a tensioner (2); and first and second modes (Figs. 1 and 2) for receiving flexible elongate product (flexible pipe 4) to be laid from a vessel (1) (Figs. 1 and 2; column 3, line 56 - column 4, line 3) to allow the flexible pipes to leave the ship at a controlled speed. Since both Thome and De Groot teach pipe-laying apparatuses for laying pipe when a tensioner axis is in either a substantially horizontal or an elevated angle, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified to pipe laying apparatus as disclosed by Thome to lay the flexible pipe as taught by De Groot to reduce the amount of equipment required to lay both rigid pipe and

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flexible pipe from the same ship and to control the rate at which the rigid and flexible pipes leave the ship.

Regarding claim 6, Thome further discloses the tiltable structure (5) is operable in the first mode to orient the tensioner vertically and at a range of angles below vertical (Figs. 6 and 7).

Regarding claim 9, Thome further discloses the tensioner (38) in the second mode is located at a position displaced horizontally from a location from which the tensioner will be elevated by said tiltable structure in the first mode (Figs. 3, 6, and 7).

Regarding claim 11, Thome further discloses wherein the tiltable structure (5) is movable to provide said horizontal displacement of the tensioner (Figs. 4, 6, and 7).

Regarding claim 12, Thome further discloses the tiltable structure (5) is connected to the vessel by one arm (14) pivotally connected at one end to the tiltable structure (5) and at another end to the vessel (Figs. 4, 6, and 7).

Regarding claim 15, Thome in view of De Groot discloses the apparatus as discussed above. Thome further discloses detaching certain operating equipment (winch 46) and locating certain operating equipment (winch 46) for operation with the structure in a particular mode of operation (paragraphs 0042 and 0045). Given the structure as disclosed by Thome in view of De Groot, the method steps would have been obvious.

Regarding claim 21, Thome further discloses paying out the pipeline (4) using the apparatus as claimed in claim 1 operated in the first mode, the tensioner (38) gripping and paying out the rigid pipeline while supported on the tiltable structure (5) at an angle aligned with the

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angle of departure of the pipeline from the vessel (Figs. 1 - 8; paragraphs 0012, 0015, 0018, 0023 - 0031, and 0052).

Regarding claim 22, Thome fails to disclose paying out the pipeline using the apparatus as claimed in claim 1, operated in its second mode, the tensioner paying out the flexible pipeline along the substantially horizontal axis, the pipeline being diverted by the apparatus from the horizontal axis to the angle of departure of the pipeline from the vessel. De Groot teaches operated in its second mode, the tensioner (2) paying out the flexible pipeline (4) along the substantially horizontal axis, the pipeline being diverted by the apparatus from the horizontal axis to the angle of departure of the pipeline from the vessel (Fig. 1; column 3, lines 56 - 61) to allow the flexible pipes to leave the ship at a controlled speed. Since both Thome and De Groot teach pipe-laying apparatuses for laying pipe when a tensioner axis is in either a substantially horizontal or an elevated angle, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified to pipe laying apparatus as disclosed by Thome to lay the flexible pipe as taught by De Groot to reduce the amount of equipment required to lay both rigid pipe and flexible pipe from the same ship and to control the rate at which the rigid and flexible pipes leave the ship.

8. Claims 2 - 5, 7, 8, 10, 13, and 16 - 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thome in view of De Groot as applied to claim 1 above, and further in view of Recalde (4,721,411).

Regarding claim 2, Thome further discloses the tiltable structure (5) in the first mode carries a straightener (guides 37) (Fig. 3; paragraph 0029). Thome in view of De Groot fails to disclose a radius controller. Recalde teaches a tensioner and a radius controller (1384, 1386)

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(Figs. 41, 45, and 46; column 36, line 19) to limit the amount of plastic bending that is applied to the pipeline. It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the apparatus as disclosed above with the radius controller as taught by Recalde to limit the amount of plastic bending that is applied to the pipeline.

Regarding claims 3, 16, and 17, Thome in view of De Groot fails to disclose the radius controller or the straightener are provided at least partially in the form of removable modules. Recalde teaches removable modules (1302) (Fig. 45) to allow the positioning of the radius controller or the straightener to be adjusted along the tiltable structure based upon the amount of stress being applied to the pipeline and the location on the pipeline which is most vulnerable to excessive bending.

Regarding claims 4, 5, and 19, Thome fails to disclose a removable sheave. De Groot teaches a removable sheave (rounded structure extending from the back of the vessel) (Fig. 1) to divert the pipeline to the desired orientation and to prevent buckling as the pipeline is unreeled from the ship. It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the tiltable structure as taught by Thome with the removable sheave as taught by De Groot to divert the pipeline to the desired orientation and to prevent buckling as the pipeline is unreeled from the ship, the sheave is removed when the apparatus is in the first mode to remove unnecessary equipment that may interfere with the apparatus in the first mode.

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Regarding claims 7 and 20, Thome in view of De Groot fails to disclose wherein, when in the second mode, the tensioner is detachable from and supported independently of the tiltable structure, the tiltable structure (5) being returned to an upright orientation for supporting loads independently of the tensioner. Recalde teaches a tensioner (1302) (Fig. 45) that is identical to the tensioner of the present application and, therefore, Recalde teaches the tensioner is detached from the tiltable structure while in the second mode inasmuch as the tensioner of the present application is detachable from the tiltable structure. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the tensioner as taught by Thome to be removable from the tiltable structure as taught by Recalde to vary the amount of support provided to the pipeline to adjust to the different forces applied to the pipeline in the first and second modes and to control the speed at which the pipeline is laid.

Regarding claim 8, Thome in view of De Groot and further in view of Recalde fails to teach the tiltable structure is operable in the second mode at a range of angles either side of vertical. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the tiltable structure (5) (Figs. 1 and 3) as taught by Thome so that the tiltable structure can be operated in the second mode at a range of angles either side of vertical to allow maintenance on either end of the tiltable structure to be performed by personnel standing on the deck of the vessel.

Regarding claim 10, Thome further discloses a leg (15) pivoted to a deck of the vessel at the lower end of the leg (Figs. 4, 6, and 7). Thome in view of De Groot fails to disclose two legs, the lower legs joined by a crossbeam at the upper ends of the legs, the tensioner in the first mode being carried between the legs below the crossbeam, with a straightener and radius

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controller mounted above the crossbeam, and said straightener being detachable when adapting the apparatus into the second mode. Recalde teaches a pair of legs pivoted to the deck of the vessel at their lower ends and joined by a crossbeam at their upper ends, the tensioner (1118) in the first mode being carried between the legs below the crossbeam (roller track 1144), with a straightener (1114) and radius controller (1160) mounted above the crossbeam and said straightener (1114) being detachable when adapting the apparatus into the second mode (Fig. 41) to provide the tiltable structure with a stable base upon which the pipe can be supported and directed while in the first mode. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the leg (15) as taught by Thome to comprise the two legs, crossbeam, and the relative positioning of system components as taught by Recalde to improve the stability of the tiltable structure upon which the pipe is supported while in the first mode. Examiner notes that the crossbeam (1144) as taught by Recalde is located adjacent tensioner/straightener (1116) and since tensioner (1118) is located below tensioner/straightener (1116), the tensioner (1118) is carried below the crossbeam (see Fig. 41 below). Examiner explains that since the tensioner (1118) can be removed from the tiltable apparatus at any time, it is capable of being detachable when adapting the apparatus into the second mode.

Regarding claim 13, Thome in view of De Groot fails to disclose a hydraulic control system of the tensioner is a dual hydraulic system. Recalde teaches a hydraulic control system (rams 306p, 306s) (Fig. 9; column 14, lines 43 - 60) to provide both sliding and pivotal adjustment of the tensioner with respect to the tiltable structure. It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the tensioner as disclosed by Thome to include the hydraulic control system as taught by Recalde

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to provide both sliding and pivotal adjustment of the tensioner with respect to the tiltable structure.

Regarding claim 18, Thome further discloses the tensioner (38) in the second mode is located at a position displaced horizontally from a location from which the tensioner will be elevated by said tiltable structure in the first mode (Figs. 3, 6, and 7).

Response to Arguments

9. Applicant's arguments with respect to claims 1 - 13 and 15 - 22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEAN ANDRISH whose telephone number is (571)270-3098. The examiner can normally be reached on Mon - Fri, 7:30am - 5:00pm, Alternate Fri off, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on (571) 272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Sean Andrish/
Examiner, Art Unit 3672

SDA
2/1/2012